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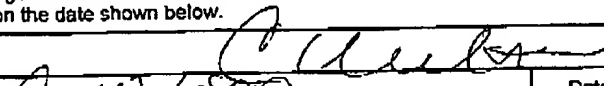
TRANSMITTAL FORM

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Application Number	09/447,472
Filing Date	November 23, 1999
First Named Inventor	Armstrong
Art Unit	2611
Examiner Name	Christopher M. Lambrecht
Total Number of Pages in This Submission **36**	Attorney Docket Number SEDN/049

ENCLOSURES *(check all that apply)*

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PATENT
Atty. Dkt No. SEDN/049

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: Armstrong et al.	§	Case Number: SEDN/049
	§	
Serial No.: 09/447,472	§	Group Art Unit: 2611
	§	
Confirmation No.: 3863	§	Examiner: Lambrecht, Christopher M.
	§	
Filed: November 23, 1999	§	
	§	
For: METHOD AND APPARATUS FOR HIERARCHICAL DISTRIBUTION OF VIDEO CONTENT FOR AN INTERACTIVE INFORMATION DISTRIBUTION SYSTEM	§	

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Dear Sir:

APPEAL BRIEF

Appellants submit this Appeal Brief to the Board of Patent Appeals and Interferences on appeal from the decision of the Examiner of Group Art Unit 2611 dated July 13, 2005, finally rejecting claims 1-9, 19, and 21-24. The final rejection of claims 1-9, 19, and 21-24 is appealed. This Appeal Brief is believed to be timely filed by the due date of January 11, 2005, as set by filing a Notice of Appeal on November 11, 2005. Please charge the fee of $250.00 for filing this brief to Deposit Account No. 20-0782/SEDN/049.

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233910-1

Real Party in Interest

The present application has been assigned to Sedna Patent Services, LLC of Philadelphia, Pennsylvania.

233910-1

PAGE 4/36 * RCVD AT 1/10/2006 3:29:00 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-6/28 * DNIS:2738300 * CSID:+17325309808 * DURATION (mm-ss):09-00

Appeal Brief
U.S. S/N 09/447,472
Page 3 of 34

Related Appeals and Interferences

Appellants assert that no other appeals or interferences are known to the Appellants, the Appellants' legal representative, or assignee that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

233910-1

Appeal Brief
U.S. S/N 09/447,472
Page 4 of 34

Status of Claims

Claims 1-9, 19, and 21-24 are pending in the application. Claims 1-24 were presented in the application as originally filed on November 23 in, 1999. Claims 10-18 were cancelled in the response to the non-final Office Action dated January 20, 2004. Claim 20 was canceled in the response to the final Office Action dated July 9, 2004. Claims 1-9, 19, and 21-24 stand rejected in view of several references as discussed below. The rejection of claims 1-9, 19, and 21-24 based on the cited references is appealed. The pending claims are shown in the attached Appendix.

233910-1

Status of Amendments

A first amendment was filed on April 20, 2004 in response to the Examiner's first non-final Office Action mailed on January 20, 2004. The first amendment amended portions of the specification. The first amendment included arguments directed at traversing the Examiner's 35 U.S.C. §103 rejections.

The Examiner responded to Appellants' April 20, 2004 amendment in a first final Office Action dated July 9, 2004. In the first final Office Action, the Examiner did not find the Appellants' arguments persuasive, and maintained the 35 U.S.C. §103 rejections for the same references cited in the first non-final Office Action.

A second amendment was filed on September 9, 2004 in response to the Examiner's first final Office Action mailed on July 9, 2004. The second amendment amended claims 1 and 19. The second amendment included additional arguments directed at traversing the Examiner's 35 U.S.C. §103 rejections.

The Examiner responded to Appellants' September 9, 2004 amendment in a first Advisory Action. In the first Advisory Action, the Examiner did not find the Appellants' arguments persuasive, and maintained the 35 U.S.C. §103 rejections for the same references cited in the first final Office Action.

A Request for Continued Examination was filed on October 4, 2004 in response to the Examiner's first Advisory Action. The Request for Continued Examination entered Appellants' previous response.

The Examiner responded to Appellants' October 4, 2004 RCE in a non-final Office Action dated December 17, 2004. In the non-final Office Action, the Examiner did not find the Appellants' arguments persuasive, and maintained the 35 U.S.C. §103 rejections for the same references cited in the first non-final Office Action.

A response was filed on March 9, 2005 in response to the Examiner's non-final office action mailed on December 17, 2004. The response included additional arguments directed at traversing the Examiner's 35 U.S.C. §103 rejections.

The Examiner responded to Appellants' March 9, 2005 response in a second final Office Action dated July 13, 2005. In the second final Office Action, the Examiner did not find the Appellants' arguments persuasive, and maintained the 35 U.S.C. §103 rejections for the same references cited in the first non-final Office Action.

Appeal Brief
U.S. S/N 09/447,472
Page 6 of 34

A response was filed on September 1, 2005 in response to the Examiner's second final Office Action mailed on July 13, 2005. The response included additional arguments directed at traversing the Examiner's 35 U.S.C. §103 rejections.

The Examiner responded to Appellants' September 1, 2005 response in a second Advisory Action. In the second Advisory Action, the Examiner did not find the Appellants' arguments persuasive, and maintained the 35 U.S.C. §103 rejections for the same references cited in the first non-final Office Action.

233910-1

Summary of Claimed Subject Matter

The present invention provides a method and apparatus for hierarchical distribution of video content for an interactive information distribution system. In the embodiment of independent claim 1, the invention comprises a plurality of servers (210) coupled to respective subscriber equipment (240) and a manager (212) coupled to each of said plurality of servers. (Appellants' specification, Pg. 9, Lines 3-23; FIG. 2). Each of the servers (210) includes a primary storage partition (218) for storing frequently requested video assets and a secondary storage partition (219) for storing a portion of infrequently requested video assets. (Appellants' specification, Pg. 9, Lines 14-16 and Pg. 10, Lines 1-9; FIG. 2). The infrequently requested video assets are divided and selectively distributed amongst the secondary partitions (219) of the plurality of servers. (Appellants' specification, Pg. 10, Lines 1-19; FIG. 2). The manager (212) routes video assets between servers (210) in response to video asset requests and migrates video assets between storage partitions in response to a video asset request rate traversing a threshold rate. (Appellants' specification, Pg. 12, Line 10 – Pg. 13, Line 8; FIG. 2).

In the embodiment of independent claim 19, the invention comprises a method for use in an interactive information distribution system comprising a plurality of servers coupled to respective subscriber equipment, each of said servers having a primary storage partition for storing a first portion of video assets and a secondary storage partition for storing at least some of a remaining portion of said video assets, said servers providing video assets to respective subscriber equipment in response to subscriber requests. The invention comprises a method for managing the storage of video assets.

In the embodiment of independent claim 19, the method comprises determining an asset request rate (506) for each of the video assets stored in each server (210). (Appellants' specification, Pg. 14, Line 16; FIG. 5). The method compares (510, 512) the determined asset request rates with respective threshold rates. (Appellants' specification, Pg. 14, Line 16 – Pg. 15, Line 2; FIG. 5). The method, in the case of video assets stored on a secondary partition having a request rate exceeding the respective threshold rate, migrates (512, 514, 516) the video assets stored on the secondary storage partition to a corresponding primary storage partition. (Appellants' specification,

233910-1

Pg. 18, Lines 16 – 22; FIG. 5). The method, in the case of the determined asset request rate for video assets stored in the primary storage partition being below a respective threshold rate, migrates (512, 518) the video assets from the primary partition to a corresponding secondary partition. (Appellants' specification, Pg. 18, Lines 23 – 26; FIG. 5). The method then divides and selectively distributes the video assets below the respective threshold rate amongst the secondary partitions of the plurality of servers. (Appellants' specification, Pg. 18, Line 23 – Page 19, Line 4; FIG. 5).

233910-1

Appeal Brief
U.S. S/N 09/447,472
Page 9 of 34

Grounds Of Rejection To Be Reviewed On Appeal

Claims 1-6, 19, 22 and 23 stand rejected under 35 U.S.C. 103(a) as being obvious over Ueno et al. (US006438596B1, hereinafter "Ueno") in view of Hokanson (US006094680A, hereinafter "Hokanson"). Claims 7-9 and 24 stand rejected as being obvious over Ueno and Hokanson in further view of Kikinis (US006163795A, hereinafter "Kikinis"). Claim 21 stands rejected as being obvious over Ueno and Hokanson in further in view of Kenner (US006269394B1, hereinafter "Kenner").

233910-1

ARGUMENTS

A. Claims 1-6, 19, 22 and 23

1. Claim 1

The Examiner has rejected claim 1 under 35 U.S.C. 103(a) as being unpatentable over Ueno et al. (US006438596B1, hereinafter "Ueno") in view of Hokanson (US006094680A, hereinafter "Hokanson"). The Appellants respectfully traverse the rejection.

In general, Ueno teaches a video on demand system that presents users with a selection list of proposed videos for which server and network resources are available to immediately serve the selection video. A service control unit determines whether server and network resources are available by sending separate queries to server and network resources management control units. (Ueno, Abstract). In particular, Ueno teaches a hierarchical system of video servers including at least one center server and at least one local server. The local servers store video sources with a high expected access frequency. The center servers store video sources with a low expected access frequency. (Ueno, Col. 18, Lines 6-12).

Ueno, however, fails to teach or suggest Appellants' invention of at least claim 1, as a whole. Namely, Ueno fails to teach or suggest the limitation of "a plurality of servers coupled to respective subscriber equipment, each of said servers having a primary storage partition for storing frequently requested video assets, each of said servers having a secondary storage partition for storing a portion of infrequently requested video assets, said infrequently requested video assets being divided and selectively distributed amongst said secondary partitions of said plurality of servers," as taught in Appellants' invention of at least claim 1. Furthermore, Ueno fails to teach or suggest the limitation of "a manager, coupled to each of said plurality of servers for routing video assets between said servers in response to video asset requests, and for migrating video assets between storage partitions in response to a video asset request rate traversing a threshold rate," as taught in Appellants' invention of at least claim 1. Specifically, Appellants' claim 1 positively recites:

233910-1

"In an interactive information distribution system including a network of provider equipment and subscriber equipment, apparatus comprising:
<u>a plurality of servers coupled to respective subscriber equipment, each of said servers having a primary storage partition for storing frequently requested video assets, each of said servers having a secondary storage partition for storing a portion of infrequently requested video assets, said infrequently requested video assets being divided and selectively distributed amongst said secondary partitions of said plurality of servers;</u> and
a manager, coupled to each of said plurality of servers for routing video assets between said servers in response to video asset requests, and <u>for migrating video assets between storage partitions in response to a video asset request rate traversing a threshold rate.</u>"

[Emphasis added.]

As taught in Appellants' invention of at least claim 1, each of the servers in the plurality of servers is partitioned such that each server has a primary storage partition for storing frequently requested video assets and a secondary storage partition for storing infrequently requested video assets. In other words, Appellants' invention teaches <u>partitioning of servers</u>. Appellants' invention further includes <u>dividing</u> and <u>selectively distributing</u> infrequently requested video assets <u>amongst the respective secondary partitions of each of the plurality of servers</u>. Furthermore, Appellants' invention includes a manager coupled to each of the servers for routing video assets between servers in response to video asset requests and for migrating video assets between storage partitions in response to a video asset request rate traversing a threshold rate.

Ueno is completely devoid of any teaching or suggestion of partitioning of servers such that each server has a first partition and a second partition. Rather, Ueno teaches <u>partitioning of a network</u>. As taught in Ueno, the network is partitioned according to respective locations of the servers. In particular, Ueno teaches partitioning of a network such that videos with an expected high frequency of access are stored in <u>local servers</u> (not within respective first partitions of servers) and videos with an expected low frequency of access are stored in <u>central servers</u> (not within respective second partitions of servers).

The <u>partitioning of a network</u> of servers such that <u>videos of a first category</u> are stored on a <u>server of a first type</u> (i.e., center server) and <u>videos of a second category</u> are stored on <u>servers of a second type</u> (i.e., local servers), as taught in Ueno, is simply

233910-1

PAGE 13/36 * RCVD AT 1/10/2006 3:29:00 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-6/28 * DNIS:2738300 * CSID:+17325309808 * DURATION (mm-ss):09-00

Appeal Brief
U.S. S/N 09/447,472
Page 12 of 34

not partitioning of each of a plurality of servers such that video assets of a first category are stored in respective primary storage partitions of the servers and video assets of a second category are stored in secondary storage partitions of the servers, as taught in Appellants' invention of at least claim 1. Ueno is completely devoid of any teaching or suggestion of any device partitioning, much less partitioning of servers into first and second storage partitions.

As such, since Ueno is completely devoid of any teaching or suggestion of any server partitions whatsoever, Ueno must also fail to teach or suggest dividing and selectively distributing video assets amongst secondary storage partitions of the plurality of servers, as taught in Appellants' invention of at least claim 1. Similarly, Ueno must also fail to teach or suggest migrating video assets between storage partitions in response to a video asset request rate traversing a threshold rate, as taught in Appellants' invention of at least claim 1.

Furthermore, in the Office Action, the Examiner correctly concedes that Ueno does not teach migrating infrequently requested assets to secondary storage partitions on the servers. (Office Action, Pg. 2). As such, the Examiner cites Hokanson for teaching migration of infrequently requested video assets to secondary storage positions of respective servers. The Appellants respectfully maintain, however, that Hokanson fails to bridge the substantial gap between Ueno and Appellants' invention of at least claim 1.

In general, Hokanson teaches a system for managing distributed resources on a network. A network manager balances the allocation of network resources among storage devices for making the resources available to users against the cost required to make the resources available to the users. (Hokanson, Abstract). Hokanson, however, fails to teach or suggest at least the limitations of "a plurality of servers coupled to respective subscriber equipment, each of said servers having a primary storage partition for storing frequently requested video assets, each of said servers having a secondary storage partition for storing a portion of infrequently requested video assets, said infrequently requested video assets being divided and selectively distributed amongst said secondary partitions of said plurality of servers," as taught in Appellants' invention of at least claim 1.

233910-1

Appeal Brief
U.S. S/N 09/447,472
Page 13 of 34

Rather, Hokanson teaches a hierarchical resource storage structure that is implemented as a collection of heterogeneous storage devices. As taught in Hokanson, as certain video content is requested more regularly in comparison to other content, the highly requested content might be moved to a higher performing device, while less requested content may be moved to a lower performing device. As such, Hokanson merely teaches partitioning a network to form a hierarchical network in which highly requested content is stored on higher performing storage devices while less requested content is stored on lower performing storage devices. In other words, Hokanson merely teaches network partitioning to form a hierarchical network (not the server partitioning taught in Appellants' invention of at least claim 1). Hokanson is completely devoid of any teaching or suggestion of partitioning any of the higher performing device or lower performing devices for storing different categories of video content in different partitions.

In the Advisory Action dated October 13, 2005, the Examiner cites Hokanson (Col. 10, Lines 35 - 49 and Col. 11, Line 16 – 30) for teaching servers having a primary partition and a secondary partition. The cited portions of Hokanson, however, merely teach "[t]he server 132 is a continuous media server which transmits video data maintained on video storage 138. The storage 138 is implemented as a collection of independent storage devices or arrays 140(1), 140(2),...,140(m) which store different program content. The database server being configured to store content in a storage hierarchy in which content rated at a higher hierarchical level can be made available to comparatively more clients and content rated at a lower hierarchical level can be made available to comparatively fewer clients. This can be accomplished through a hierarchy of different storage devices (with higher rated content being stored on higher performance storage mediums)...." (Hokanson, Col. 18, Lines 36 – 48, Emphasis added).

In other words, the portions of Hokanson cited by the Examiner merely reiterate that the Hokanson teaches partitioning of a network to form a hierarchical network in which devices are categorized as high performance or low performance, and videos of a first category are stored on high performance devices while videos of a second category are stored on low performance devices. Hokanson is completely devoid of any teaching or suggestion of any partitioning of the high performance storage devices or low

233910-1

performance storage devices, or any other devices. As such, the partitioning of a network to form a hierarchical network of storage devices such that videos of a first category are stored on devices of a first type and videos of a second category are stored on devices of a second type, as taught in Hokanson, is simply not partitioning of servers such that video assets of a first category are stored in respective primary partitions of each of the plurality of servers and video assets of a second category are stored in respective secondary partitions of each of the plurality of servers, as taught in Appellants' invention of at least claim 1.

Furthermore, since Hokanson fails to teach or suggest that each of the plurality of servers has a primary storage position for storing frequently requested video assets and a secondary storage position for storing a portion of infrequently requested video assets, Hokanson must also fail to teach or suggest that the infrequently requested video assets are divided and selectively distributed amongst the secondary portions of the servers, as taught in Appellants' invention of at least claim 1. Furthermore, even if Hokanson did teach partitioned servers according to Appellants' invention of at least claim 1 (which Appellants maintain it does not), Hokanson is still completely devoid of any teaching or suggestion that infrequently requested video assets are divided and selectively distributed amongst the secondary portions of the plurality of servers, as taught in Appellants' invention of at least claim 1.

Rather, Hokanson teaches that infrequent movies "that are rarely or never requested can be removed from the video storage 138 and archived in off-line storage facilities to free up space for the multiple copies of the hot new movie." (Hokanson, Col. 11, Lines 25-29). In other words, Hokanson does not teach that infrequently requested videos are distributed amongst a plurality of servers, much less amongst specific partitions associated with of the plurality of servers. As taught in Hokanson, infrequently requested videos are stored in off-line storage facilities. Since an off-line storage facility simply cannot respond to user requests for videos, the off-line storage facilities cannot operate as servers. Thus, Hokanson simply does not teach that infrequently request movies are distributed amongst specific partitions associated with each server in a plurality of servers. Therefore, Hokanson fails to teach or suggest at least the limitation of "said infrequently requested video assets being divided and selectively distributed

233910-1

Appeal Brief
U.S. S/N 09/447,472
Page 15 of 34

amongst said secondary partitions of said plurality of servers," as taught in Appellants' invention of at least claim 1.

Moreover, even if Ueno and Hokanson could somehow be operably combined, the combined references would merely disclose a network of storage devices in which the network is partitioned according to location and storage device type. Ueno teaches partitioning of a network of servers such that videos of a first category are stored on servers of a first type and videos of a second category are stored on servers of a second type, where the server types depend upon location (i.e., local servers versus center servers). Hokanson teaches partitioning of a network to form a hierarchical network such that highly requested content is stored on higher performing devices while less requested content is stored on lower performing devices. As such, a combination of Ueno and Hokanson would still teach partitioning of a network where the partitioning of the network is based on both location (see Ueno) and device type (see Hokanson). Thus, the combination of Ueno and Hokanson simply does not teach partitioning of each of a plurality of servers such that video assets of a first category are stored in respective first partitions of each of the plurality of servers and video assets of a second category are stored in respective second partitions of each of the plurality of servers, as taught in Appellants' invention of at least claim 1.

In other words, since servers are not partitioned in Ueno, and servers are not partitioned in Hokanson, a combination of Ueno and Hokanson simply cannot teach partitioning of servers in accordance with Appellants' invention of at least claim 1. As such, since the combination of Ueno and Hokanson cannot teach partitioning of servers, the combination of Ueno and Hokanson also cannot teach at least the limitations of "each of said servers having a primary storage partition for storing frequently requested video assets, each of said servers having a secondary storage partition for storing a portion of infrequently requested video assets, said infrequently requested video assets being divided and selectively distributed amongst said secondary partitions of said plurality of servers," as taught in Appellants' invention of at least claim 1. Therefore, Ueno and Hokanson, alone or in combination, fail to teach or suggest the Appellants' invention as a whole.

233910-1

The test under 35 U.S.C. §103 is not whether an improvement or a use set forth in a patent would have been obvious or non-obvious; rather, the test is whether the claimed invention, considered as a whole, would have been obvious. Jones v. Hardy, 110 U.S.P.Q. 1021, 1024 (Fed. Cir. 1984) (emphasis added). Moreover, the invention as a whole is not restricted to the specific subject matter claimed, but also embraces its properties and the problem it solves. In re Wright, 6 U.S.P.Q. 2d 1959, 1961 (Fed. Cir. 1988) (emphasis added). Ueno and Hokanson, alone or in combination, fail to teach or suggest the Appellants' invention as a whole.

As such, the Appellants submit that independent claim 1 is not obvious and fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder. Therefore, the Appellants respectfully request that the rejection be reversed.

2.   Claims 2-6

The Examiner has rejected claims 2-6 under 35 U.S.C. 103(a) as being unpatentable over Ueno et al. (US006438596B1, hereinafter "Ueno") in view of Hokanson (US006094680A, hereinafter "Hokanson"). The Appellants respectfully traverse the rejection.

First, claim 2 depends from independent claim 1 and recites additional features thereof. As such, the combination of Ueno and Hokanson fails to teach or suggest claim 2 of Appellants' invention, since the combined references fail to teach or suggest at least the limitations of "each of said servers having a primary storage partition for storing frequently requested video assets, each of said servers having a secondary storage partition for storing a portion of infrequently requested video assets, said infrequently requested video assets being divided and selectively distributed amongst said secondary partitions of said plurality of servers," as taught in Appellants' invention of at least claim 1. Therefore, the combination of Ueno and Hokanson fails to teach or suggest the Appellants' invention of at least claim 2, as a whole.

Ueno is completely devoid of any teaching or suggestion of at least the limitations of "each of said servers having a primary storage partition for storing frequently requested video assets, each of said servers having a secondary storage partition for storing a portion of infrequently requested video assets, said infrequently

requested video assets being divided and selectively distributed amongst said secondary partitions of said plurality of servers," as taught in Appellants' invention of at least claim 1. Furthermore, Hokanson fails to bridge the substantial gap as between Ueno and Applicants' invention of at least claim 1

In the final Office Action, the Examiner alleges that Hokanson teaches Appellants' limitations of claim 2 that the manager allocates the video assets to a least one of the plurality of servers for storage on the primary storage partitions when the asset request rate traverses a threshold rate, and the manager stores the video assets on the secondary storage partition when the asset request rate does not traverse the threshold rate. The Appellants respectfully disagree.

The portion of Hokanson cited by the Examiner merely states that a content manager evaluates whether a movie should be moved within a storage hierarchy to a higher or lower hierarchical level based upon the subscribers' requests and the present cost in relation to the defined cost/availability balance. Specifically, the portion of Hokanson cited by the Examiner states that "[t]his can be accomplished by replicating the movie multiple times on the storage 138 to thereby render the movie more available to more subscribers. If necessary, movies that are rarely or never requested can be removed from the video storage 138 and archived in off-line storage facilities to free up space for the multiple copies of the hot new movie." (Hokanson, Col. 11, Lines 23-30). In other words, the cited portions of Hokanson merely teach that a highly requested movie is replicated multiple times on a video storage facility, while less requested movies are removed from the video storage and archived in off-line storage facilities.

The replication of a video on a single video storage facility, as taught in Hokanson, is simply not allocation of a video asset across at least one of a plurality of servers for storage on primary storage partitions associated with the servers, as taught in Appellants' invention of at least claim 2. Hokanson is completely devoid of any teaching or suggestion of any storage partitions on storage 138, much less any teaching or suggestion of primary storage partitions and secondary storage partitions associated with storage 138. In fact, Hokanson is completely devoid of any teaching or suggestion of any device partitioning whatsoever. As such, Hokanson fails to teach or suggest at least the limitation of "said manager allocates said video assets to at least one of said

233910-1

Appeal Brief
U.S. S/N 09/447,472
Page 18 of 34

plurality of servers for storage on said primary storage partitions when said asset request rate traverses said threshold rate," as taught in Appellants' invention of at least claim 2.

The removal of rarely or never requested movies from a video storage, and archival of the rarely or never requested movies in an off-line storage facility, as taught in Hokanson, is simply not storage of video assets on secondary storage partitions when an asset request rate does not traverse a threshold rate, as taught in Appellants' invention of at least claim 2. As taught in Hokanson, the off-line storage facility is not associated with the video storage 138. Rather, the off-line storage facility of Hokanson is physically distinct and separate from the video storage 138. As such, the off-line storage facility of Hokanson simply does not operate as a secondary storage partition of storage 138. In fact, as discussed hereinabove, Hokanson is completely devoid of any teaching or suggestion of any device partitioning whatsoever. As such, Hokanson fails to teach or suggest at least the limitation of "said manager stores said video assets on said secondary storage partition when said asset request rate does not traverse said threshold rate," as taught in Appellants' invention of at least claim 2. As such, Ueno and Hokanson, fail to teach or suggest Appellants' invention of at least claim 2, as a whole.

As such, Appellants respectfully submit that dependent claim 2 is not made obvious by the teachings of Ueno and Hokanson and, as such, fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder. Furthermore, claims 3-6 depend, either directly or indirectly, from claim 2 and recite additional features therefor. As such, for a least the reasons as discussed herein with respect to claims 1 and 2, Appellants respectfully submit that dependent claims 3-6 are also not made obvious by the teachings of Ueno and Hokanson and, as such, fully satisfy the requirements of 35 U.S.C. §103 and are patentable thereunder. Therefore, Appellants respectfully request that the rejection of these claims be reversed.

3.   Claim 19, 22-23

The Examiner has rejected claims 19 and 22-23 under 35 U.S.C. 103(a) as being unpatentable over Ueno et al. (US006438596B1, hereinafter "Ueno") in view of

233910-1

Hokanson (US006094680A, hereinafter "Hokanson"). The Appellants respectfully traverse the rejection.

As discussed above with respect to claim 1, Ueno generally teaches a video on demand system that presents users with a selection list of proposed videos for which server and network resources are available to immediately serve the selection video. A service control unit determines whether server and network resources are available by sending separate queries to server and network resources management control units. (Ueno, Abstract) In particular, Ueno teaches a hierarchical system of video servers including at least one center server and at least one local server. The local servers store video sources with a high expected access frequency. The center servers store video sources with a low expected access frequency. (Ueno, Col. 18, Lines 6-12).

As admitted by the Examiner in the final Office Action, however, Ueno does not disclose that each of the plurality of servers has a primary storage partition for storing a first portion of video assets and a secondary storage partition for storing a remaining portion of video assets. In the final Office Action, the Examiner also admits that Ueno fails to disclose the limitations of "determining an asset request rate for each of said video assets stored in each server, comparing said determined asset request rates with respective threshold rates [and] in the case of video assets stored on a secondary partition having a request rate exceeding said respective threshold rate, migrating said video assets stored on said secondary storage partition to a corresponding primary storage partition; wherein in the case of said determined asset request rate for video assets stored in a primary storage partition being below a respective threshold rate, migrating said video assets from said primary partition to a corresponding secondary partition," as taught in Appellants' invention of at least claim 19. (Final Office Action, Pg. 8).

As such, the Examiner relies on Hokanson for teaching these limitations of Appellants' invention of at least claim 19. Hokanson, however, fails to bridge the substantial gap as between Ueno and Appellants' invention of at least claim 19. As discussed herein with respect to claim 1, Hokanson fails to teach or suggest a plurality of servers where each server includes a primary partition for storing a first portion of

233910-1

video assets and a secondary partition for storing a remaining portion of video assets, as taught in Appellants' invention of at least claim 19.

Furthermore, since Hokanson fails to teach or suggest servers having primary and secondary partitions, Hokanson must also fail to teach or suggest at least the limitations of "in the case of video assets stored on a secondary partition having a request rate exceeding said respective threshold rate, migrating said video assets stored on said secondary storage partition to a corresponding primary storage partition; wherein in the case of said determined asset request rate for video assets stored in a primary storage partition being below a respective threshold rate, migrating said video assets from said primary partition to a corresponding secondary partition and dividing and selectively distributing said video assets below said respective threshold rate amongst said secondary partitions of said plurality of servers," as taught in Appellants' invention of at least claim 19.

Specifically, Appellants' claim 19 positively recites:

"In an interactive information distribution system comprising a plurality of servers coupled to respective subscriber equipment, each of said servers having a primary storage partition for storing a first portion of video assets and a secondary storage partition for storing at least some of a remaining portion of said video assets, said servers providing video assets to respective subscriber equipment in response to subscriber requests, a method comprising the steps of:
    determining an asset request rate for each of said video assets stored in each server;
    comparing said determined asset request rates with respective threshold rates;
    in the case of video assets stored on a secondary partition having a request rate exceeding said respective threshold rate, migrating said video assets stored on said secondary storage partition to a corresponding primary storage partition;
    wherein in the case of said determined asset request rate for video assets stored in a primary storage partition being below a respective threshold rate, migrating said video assets from said primary partition to a corresponding secondary partition; and
    dividing and selectively distributing said video assets below said respective threshold rate amongst said secondary partitions of said plurality of servers."

[Emphasis added.]

By contrast, as discussed herein with respect to claim 1, Hokanson generally teaches a hierarchical network that is implemented as a collection of heterogeneous

233910-1

storage devices. As taught in Hokanson, as certain video content is requested more regularly in comparison to other content, the highly requested content might be moved to a higher performing device, while less requested content may be moved to a lower performing device. In other words, as taught in Hokanson, a network is partitioned in a hierarchical network such that highly requested content is stored on higher performing devices while less requested content is stored on lower performing devices. Hokanson is completely devoid of any teaching or suggestion of partitioning of any of the higher performing devices or lower performing devices for storing different categories of video content in different partitions of such devices.

In the Office Action, the Examiner cites Hokanson (Col. 11, Lines 20-30) for teaching the limitation of "in the case of video assets stored on a secondary partition having a request rate exceeding said respective threshold rate, migrating said video assets stored on said secondary storage partition to a corresponding primary storage partition," as taught in Appellants' limitation of at least claim 19. The cited portion of Hokanson, however, merely teaches that a highly requested movie is replicated multiple times on a video storage facility, while less requested movies are removed from the video storage and archived in off-line storage facilities.

The replication of a video on a single video storage facility, as taught in Hokanson, is simply not migration of a video asset from a secondary storage partition to a corresponding primary storage partition, as taught in Appellants' invention of at least claim 19. In fact, replication of a video asset, as taught in Hokanson, has absolutely nothing to do with migration of video assets between server partitions, as taught in Appellants' invention of at least claim 19. As such, Hokanson fails to teach or suggest at least the limitation of "in the case of video assets stored on a secondary partition having a request rate exceeding said respective threshold rate, migrating said video assets stored on said secondary storage partition to a corresponding primary storage partition," as taught in Appellants' invention of at least claim 19.

Furthermore, in the Office Action, the Examiner cites Hokanson (Col. 11, Lines 5-30) for teaching the limitation of "wherein in the case of said determined asset request rate for video assets stored in a primary storage partition being below a respective threshold rate, migrating said video assets from said primary partition to a

233910-1

corresponding secondary partition," as taught in Appellants' limitation of at least claim 19. The cited portion of Hokanson, however, merely teaches that rarely or never requested movies are removed from the video storage and archived in off-line storage facilities. The removal of rarely or never requested movies from a video storage, and archival of the rarely or never requested movies in an off-line storage facility, as taught in Hokanson, is simply not migration of video assets from a primary storage partition to a corresponding secondary storage partition when an asset request rate is below a threshold rate, as taught in Appellants' invention of at least claim 19.

Furthermore, as taught in Hokanson, the off-line storage facility is not associated with the video storage 138. Rather, the off-line storage facility of Hokanson is physically distinct and separate from the video storage 138. As such, the off-line storage facility of Hokanson simply does not operate as a secondary storage partition of a server, as taught in Appellants' invention of at least claim 19. As such, Hokanson fails to teach or suggest at least the limitation of "wherein in the case of said determined asset request rate for video assets stored in a primary storage partition being below a respective threshold rate, migrating said video assets from said primary partition to a corresponding secondary partition," as taught in Appellants' invention of at least claim 19.

Moreover, as discussed above with respect to claim 1, even if Ueno and Hokanson could somehow be operably combined, the combined references would merely disclose a network of storage devices in which the network is partitioned according to location and storage device type. Ueno teaches partitioning of a network of servers such that videos of a first category are stored on servers of a first type and videos of a second category are stored on servers of a second type, where the server types depend upon location (i.e., local servers versus center servers). Hokanson teaches partitioning of a network such that highly requested content is stored on higher performing devices while less requested content is stored on lower performing devices. As such, a combination of Ueno and Hokanson would still teach partitioning of a network where the partitioning of the network is based on both location (see Ueno) and device type (see Hokanson). Thus, the combination of Ueno and Hokanson simply

does not teach partitioning of each of a plurality of <u>servers</u>, as taught in Appellants' invention of at least claim 19.

In other words, since servers are not partitioned in Ueno, and servers are not partitioned in Hokanson, a combination of Ueno and Hokanson simply cannot teach partitioning of servers in accordance with Appellants' invention of at least claim 19. As such, since the combination of Ueno and Hokanson cannot teach partitioning of servers, the combination of Ueno and Hokanson also cannot teach at least the limitations of "in the case of video assets stored on a secondary partition having a request rate exceeding said respective threshold rate, migrating said video assets stored on said secondary storage partition to a corresponding primary storage partition; wherein in the case of said determined asset request rate for video assets stored in a primary storage partition being below a respective threshold rate, migrating said video assets from said primary partition to a corresponding secondary partition," as taught in Appellants' invention of at least claim 19. Therefore, Ueno and Hokanson, alone or in combination, fail to teach or suggest the Appellants' invention <u>as a whole</u>.

The test under 35 U.S.C. §103 is not whether an improvement or a use set forth in a patent would have been obvious or non-obvious; rather, the test is whether the claimed invention, considered as a whole, would have been obvious. <u>Jones v. Hardy</u>, 110 U.S.P.Q. 1021, 1024 (Fed. Cir. 1984) (emphasis added). Moreover, the invention as a whole is not restricted to the specific subject matter claimed, but also embraces its properties and the problem it solves. <u>In re Wright</u>, 6 U.S.P.Q. 2d 1959, 1961 (Fed. Cir. 1988) (emphasis added). Ueno and Hokanson, alone or in combination, fail to teach or suggest the Appellants' invention <u>as a whole</u>.

As such, Appellants respectfully submit that dependent claim 19 is not made obvious by the teachings of Ueno and Hokanson and, as such, fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder. Furthermore, claims 22-23 depend, either directly or indirectly, from claim 19 and recite additional features therefor. As such, for a least the reasons as discussed herein with respect to claim 19, Appellants respectfully submit that dependent claims 22-23 are also not made obvious by the teachings of Ueno and Hokanson and, as such, fully satisfy the requirements of

233910-1

35 U.S.C. §103 and are patentable thereunder. Therefore, the Appellants respectfully request that the rejection be reversed.

B.   Claims 7-9 and 24

The Examiner has rejected claims 7-9 and 24 as being unpatentable over Ueno and Hokanson as applied to claims 6 and 23 above, and further in view of Kikinis (US006163795A, hereinafter "Kikinis"). The Appellants respectfully traverse the rejection.

For at least the reasons set forth above, the Appellants submit that independent claims 1 and 19 are not obvious in view of the combination of Ueno and Hokanson. Furthermore, claims 7-9 and 24 depend, directly or indirectly, from independent claims 1 and 19, and recite additional features therefor. As such, for at least the same reasons as discussed above, the Appellants submit that dependent claims 7-9 and 24 are also not obvious in view of the combination of Ueno and Hokanson. Furthermore, Kikinis fails to bridge the substantial gap between Ueno and Hokanson and Appellants' invention of at least claim 1.

In general, Kikinis teaches a service for delivering, on demand, locally accessed video to client devices. The service includes a plurality of client stations adapted for receiving and playing videos from file servers. (Kikinis, Abstract). In particular, each file server with a video input apparatus accepts video clips from a video input apparatus, stores the clippings in a database, and shares the clippings with other file servers. (Kikinis, Col. 2, Lines 21-24). As taught in Kikinis, the file servers automatically transmit newly downloaded locally-accessed video entities to each of the plurality of file servers on the network through WAN connections, store details of various interests provided by clients, notify connected clients of new video entities available, and transmit selected video entities to at least one of the client stations.

Kikinis, however, fails to teach or suggest each and every element of Appellants' invention of at least claim 1. Namely, with respect to claim 1, Kikinis fails to teach or suggest at least the limitations of "a plurality of servers coupled to respective subscriber equipment, each of said servers having a primary storage partition for storing frequently requested video assets, each of said servers having a secondary storage partition for

233910-1

storing a portion of infrequently requested video assets, said infrequently requested video assets being divided and selectively distributed amongst said secondary partitions of said plurality of servers" and "migrating video assets between storage partitions in response to a video asset request rate traversing a threshold rate," as taught in Appellants' invention of at least claim 1.

Similarly, Kikinis fails to teach or suggest each and every element of Appellants' invention of at least claim 19. Namely, with respect to claim 19, Kikinis fails to teach or suggest at least the limitations of "in the case of video assets stored on a secondary partition having a request rate exceeding said respective threshold rate, migrating said video assets stored on said secondary storage partition to a corresponding primary storage partition; wherein in the case of said determined asset request rate for video assets stored in a primary storage partition being below a respective threshold rate, migrating said video assets from said primary partition to a corresponding secondary partition and dividing and selectively distributing said video assets below said respective threshold rate amongst said secondary partitions of said plurality of servers," as taught in Appellants' invention of at least claim 19.

Rather, from at least the portions of Kikinis described above, it is clear that Kikinis is primarily directed towards distribution of video entities to the file servers using various WAN connections, as well as tailoring the video content that is made available to the client using information provided by the clients regarding the video content that the clients are interested in receiving from the file servers. Kikinis is completely devoid of any teaching or suggestion of partitioning each of a plurality of servers into a primary storage partition and a secondary storage partition. Furthermore, Kikinis is completely devoid of any teaching or suggestion that the first storage partitions store frequently requested video assets and the second storage partitions store infrequently requested video assets. Thus, Kikinis must also fail to teach or suggest any of the other limitations of Appellants' invention of the least claims 1 and 19.

As such, Ueno, Hokanson, and Kikinis, alone or in combination, fail to teach or suggest the Appellants' invention <u>as a whole</u>. Thus, Appellants submit that independent claims 1 and 19 are not obvious and fully satisfy the requirements of 35 U.S.C. §103 and are patentable thereunder. Furthermore, claims 7-9 and 24 depend, either directly or

233910-1

indirectly, from independent claims 1 and 19, and recite additional features therefor. As such, Appellants submit that claims 7-9 and 24 are not obvious and fully satisfy the requirements of 35 U.S.C. §103. Therefore, the Appellants respectfully request that the rejection be reversed.

C.   Claim 21

The Examiner has rejected claim 21 as being unpatentable over Ueno and Hokanson as applied to claim 19 above, and further in view of Kenner (US006269394B1, hereinafter "Kenner"). The Appellants respectfully traverse the rejection.

For at least the reasons set forth above, the Appellants submit that independent claim 19 is not obvious in view of the combination of Ueno and Hokanson. Furthermore, claim 21 depends from independent claim 19 and recites additional features therefor. As such, for at least the same reasons as discussed above, the Appellants submit that dependent claim 21 is also not obvious in view of the combination of Ueno and Hokanson. Furthermore, Kenner fails to bridge the substantial gap between Ueno and Hokanson and Appellants' invention of at least claim 19.

In general, Kenner teaches a video clip storage and retrieval system in which video clips may be stored locally or at remote locations, and may be requested and retrieved by a user via an associated multimedia terminal. (Kenner, Abstract). In particular, Kenner teaches that the system further includes means for uploading and distributing clips to geographically diverse servers, dynamic load balancing, and subscription management mechanisms. Kenner, however, fails to teach or suggest each and every element of Appellants' invention. Namely, Kenner fails to teach or suggest at least the limitations of "in the case of video assets stored on a secondary partition having a request rate exceeding said respective threshold rate, migrating said video assets stored on said secondary storage partition to a corresponding primary storage partition; wherein in the case of said determined asset request rate for video assets stored in a primary storage partition being below a respective threshold rate, migrating said video assets from said primary partition to a corresponding secondary partition," as taught in Appellants' invention of at least claim 19.

233910-1

Rather, from at least the portions of Kenner described above, it is clear that Kenner is primarily directed towards retrieval of comprehensive data from one or more databases in response to requests from a user multimedia terminal. Kenner merely teaches the partitioning of a system based on the features important to the operation and the maintenance of the system. (Kenner, Col. 4, Lines 47-53). Kenner is completely devoid of any teaching or suggestion that the first storage partitions store frequently requested video assets and the second storage partitions store infrequently requested video assets. In fact, Kenner is completely devoid of any teaching or suggestion of partitioning of each of a plurality of servers into a primary storage partition and an associated secondary storage partition.

As such, since Kenner fails to teach or suggest servers having primary storage partitions and secondary storage partitions, Kenner must also be completely devoid of any teaching or suggestion of migrating video assets between primary storage partitions and secondary storage partitions. Furthermore, Kenner must also fail to teach or suggest migration of video assets from a secondary storage partition to a primary storage partition when a request rate exceeds the threshold rate, as taught in Appellants' invention of at least claim 19. Similarly, Kenner must also fail to teach or suggest migration of video assets from a primary storage partition to a secondary storage partition when they determined asset request rate is determined to be below the threshold rate, as taught in Appellants' invention of at least claim 19.

As such, Ueno, Hokanson, and Kenner, alone or in combination, fail to teach or suggest the Appellants' invention as a whole. Thus, Appellants submit that independent claim 19 is not obvious and fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder. Furthermore, claim 21 depends from independent claim 19, and recites additional features therefor. As such, the Appellants submit that claim 21 is not obvious and fully satisfies the requirements of 35 U.S.C. §103. Therefore, Appellants respectfully request that the rejection be reversed.

233910-1

Appeal Brief
U.S. S/N 09/447,472
Page 28 of 34

CONCLUSION

Appellants respectfully request that the Board reverse the rejections and pass the claims to allowance.

Respectfully submitted,

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233910-1

CLAIMS APPENDIX

1. (Previously presented) In an interactive information distribution system including a network of provider equipment and subscriber equipment, apparatus comprising:

a plurality of servers coupled to respective subscriber equipment, each of said servers having a primary storage partition for storing frequently requested video assets, each of said servers having a secondary storage partition for storing a portion of infrequently requested video assets, said infrequently requested video assets being divided and selectively distributed amongst said secondary partitions of said plurality of servers; and

a manager, coupled to each of said plurality of servers for routing video assets between said servers in response to video asset requests, and for migrating video assets between storage partitions in response to a video asset request rate traversing a threshold rate.

2. (original) The apparatus of claim 1, wherein:

said manager allocates said video assets to at least one of said plurality of servers for storage on said primary storage partitions when said asset request rate traverses said threshold rate; and

said manager stores said video assets on said secondary storage partition when said asset request rate does not traverse said threshold rate.

3. (original) The apparatus of claim 2, wherein:

in response to an asset request from subscriber equipment, said manager distributes to said requesting subscriber equipment the requested video asset from a server storing the requested video asset.

4. (original) The apparatus of claim 3, wherein said manager comprises:

a content manager, coupled to said plurality of servers for tracking, inventorying and administering said asset request rate and said threshold rate for each of said video assets;

233910-1

a stream session manager, coupled to said plurality of servers and linked with said content manager, for distributing streams of video assets to subscriber equipment requesting said video assets; and

a content session manager, coupled to said content manager and said plurality of servers, for receiving asset requests from said stream session manager via said content manager.

5.   (original) The apparatus of claim 4, further comprising

an inter-server network, coupled between each of said plurality of servers, for transmitting and receiving said video assets; and

an access network, coupled between each of said plurality of servers and said respective subscriber equipment, for receiving asset requests and transmitting video assets.

6.   (original) The apparatus of claim 5, wherein a server, identified by said content manager as storing a requested video asset, provides said requested video asset to requesting subscriber equipment via said access network.

7.   (original) The apparatus of claim 6, wherein said requested video asset is provided to said access network via an intervening server.

8.   (original) The apparatus of claim 7, wherein said stream session manager, causes transmission of said video asset across said access network to said subscriber equipment.

9.   (original) The apparatus of claim 8, wherein said video asset is stored on said primary storage partition or secondary storage partition of at least one of said plurality of said servers correspondingly linked to said subscriber equipment.

Claims 10-18 (Cancelled)

233910-1

19.   (Previously presented) In an interactive information distribution system comprising a plurality of servers coupled to respective subscriber equipment, each of said servers having a primary storage partition for storing a first portion of video assets and a secondary storage partition for storing at least some of a remaining portion of said video assets, said servers providing video assets to respective subscriber equipment in response to subscriber requests, a method comprising the steps of:

determining an asset request rate for each of said video assets stored in each server;

comparing said determined asset request rates with respective threshold rates;

in the case of video assets stored on a secondary partition having a request rate exceeding said respective threshold rate, migrating said video assets stored on said secondary storage partition to a corresponding primary storage partition;

wherein in the case of said determined asset request rate for video assets stored in a primary storage partition being below a respective threshold rate, migrating said video assets from said primary partition to a corresponding secondary partition; and

dividing and selectively distributing said video assets below said respective threshold rate amongst said secondary partitions of said plurality of servers.

20.   Cancelled

21.   (original) The method of claim 20, further comprising the step of removing duplicates of said video assets from each of said primary storage partitions.

22.   (original) The method of claim 20, further comprising the steps of:
identifying a server having a primary partition storing a requested video asset;
causing said identified server to begin providing said requested video asset; and
transmitting said video asset through an access network to said subscriber equipment initiating said asset request.

23.   (original) The method of claim 22, wherein said identified server is coupled directly to said requesting subscriber equipment.

Appeal Brief
U.S. S/N 09/447,472
Page 32 of 34

24.   (original) The method of claim 23, wherein said identified server is coupled to said requesting subscriber via an intervening server, said identified server communicating with said intervening server via an inter-server network.

233810-1

Appeal Brief
U.S. S/N 09/447,472
Page 33 of 34

EVIDENCE APPENDIX

None

233910-1

PAGE 35/36 * RCVD AT 1/10/2006 3:29:00 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-6/28 * DNIS:2738300 * CSID:+17325309808 * DURATION (mm-ss):09-00

RELATED PROCEEDINGS APPENDIX

None

233910-1